

threshold, for example, a predetermined number of feet from the beacon reader 12. The customer 15 may log into an application for example, at the user's smartphone or personal computer, that tracks individual items, activity related to the items 21, and so on. A specific location of the tag 22 can be determined, for example, by using one or more readers 12 to triangulate the tag's location, to see how often the item 21 moves within the threshold region. In some embodiments, the customer 15 may determine from the RTMS 10, i.e., by viewing data on a user interface, a last known location of the item 21, for example, by establishing a beacon reader 12 that the tagged item passed.

[0069] Another guideline may relate to upgrade guidelines. Tagged items 21 may be establish upgrade guidelines. The customer 15 may select an automatic upgrade feature, for example, at the RTMS 10. The automatic upgrade feature may bypass notifying the customer 15 of availability, and send the upgraded item to the customer 15 directly. In some embodiments, the customer 15 may select to receive a notification of item upgrades, for example, generated by the RTMS 10 and output to a smartphone or other electronic device. Here, when an upgrade is available, the RTMS 10 can generate a notification to the customer 15. The customer 15 can configure the RTMS 10 to ignore upgrades, for example, via the user interface directly communicating with the RTMS 10, or otherwise opt out of receiving notifications regarding advertisements, discounts, or other marketing information otherwise provided to the customer 15. The customer 15 may have flexibility in selecting if and when they wish to receive an upgrade for an item 21.

[0070] Another guideline may relate to recall guidelines, which may be configured by the customer 15. Recall guidelines may include a setting where the item 21 is an electric product, which may be shut down in response to a determination that a recall is necessary. Recalls of products may be set by the manufacturer when defects are identified. The manufacturer notifies the retailer. The retailer may search a point of sale (POS) database or the like to identify the buyer and notify the buyer. Here, the RTMS 10 may automatically for the automatic replacement of a product identified for recall by receiving and processing such data. This may establish a connection with the IoT

[0071] A recall association may be established to notify the customer 15 that the customer should not be using a particular product because it has been recalled. The RTMS 10 can warn and alert a customer 15 that the customer 15 is using a recalled product, and/or recommend a replacement product. They should be using the replacement product instead. In response to the RTMS 10 processing an alert, it can automatically order a replacement item. In some embodiments, the RTMS 10 can alert the customer 15 of an issue and allow the customer to decide whether to replenish or ignore. The customer 15 may select, for example, at a user interface in communication with the RTMS 10, to ignore all alerts. The customer 15 may opt out of receiving recall notifications from the RTMS 10. For example, the customer 15 may accept the risk of using a recalled product which is highly inadvisable. Here, the customer 15 may access a mobile or web application from an electronic device such as a smartphone 17, and accept the liability by ignoring these warnings.

[0072] FIG. 4 is a flowchart of a method for providing a retail subscription service in an IoT environment, in accordance with some embodiments. Some or all of the method

200 can be performed at the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1. The method 200 can be governed by instructions that are stored in a memory device of the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1, and executed by a hardware processor of the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1.

[0073] At block 202, item data is received from a tag 22 associated with a consumer item 21. Item data may include usage data such as a remaining amount and/or consumed amount of the item. For example, the item 21 may include food, and the data can include an amount of the food that is remaining. In another example, the item 21 may be a battery, and the data can include an amount of battery life. Other data may collected by the tag 22 may be received by the RTMS 10, such as movement data, or a location of the item 21, or activity related to the item 21. Other item data may include movement data, where a movement of the tag 22 is captured via beacon readers 12 by the RTMS 10 and can establish usage of the item 21.

[0074] At block 204, a search may be performed for other items associated with the item 21. The RTMS 10 may collect data about other items related to the tagged item 21. Data may be collected from any number of sources, including but not limited to databases, public and private data repositories, websites, mobile device applications, and so on. This other data may be determined from the customer profile generator 38, which processes information about the customer 15 from the database 42, and may update a customer profile that is used to analyze item use patterns. For example, another item may be an item that complements or functions with a tagged IoT device. In another example, the customer profile generator 38 may establish that the customer 15 purchases a particular flavor of toothpaste. The order processor 36 may order this flavor of toothpaste when a current toothpaste supply, which is tagged, is determined to be depleted, or otherwise determined to require replenishment.

[0075] At block 206, an action may be performed based on a determination of usage or movement of the item 21. For example, a related item determined from block 204 may be automatically ordered. Another action may include the RTMS 10 communicating with a smartphone or other electronic device of the customer 15 that an item replenishment, replacement, or upgraded is recommended or required. Here, the user may have an option to reject such a recommendation, for example, by submitting a response electronically from the smartphone or other electronic device to the RTMS 10.

[0076] FIG. 5 is a flowchart of a method 300 for cross-selling in an IoT environment, in accordance with some embodiments. Some or all of the method 300 can be performed at the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1. The method 300 can be governed by instructions that are stored in a memory device of the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1, and executed by a hardware processor of the RTMS 10 of FIGS. 1 and 2, and/or other elements of the environment illustrated in FIG. 1.

[0077] At block 302, a first item is identified. The first item includes a tag, for example, described herein. An association